CLAIM LISTING

1.   (**Currently Amended**) A monitoring system employed within a network comprising:

a cluster of application servers executing on server hardware,

wherein the cluster of application servers includes multiple application server instances and a central services instance that provides communication and synchronization among the multiple application server instances;

a memory to store a file including semantics and directives to generate a monitor tree for a Java monitoring architecture (JMA) monitoring system compatible with Java management extensions (JMX), wherein the file is retrieved from a database by a monitor service that interfaces a visual administrator to a node of ~~a monitoring~~ the monitor tree,

where the semantics and directives define a hierarchical architecture of a monitor tree that monitors a plurality of Java engine resources of [[a]] the cluster of application servers spanning multiple Java virtual machines (JVMs),

the semantics defining code to generate the monitor tree, including information about monitor managed beans, resources to be monitored, and relationships between the monitor managed beans and the resources, and

the directives defining how the semantics are to be implemented to form the monitor ~~tree,~~

~~wherein the cluster of application servers includes multiple application server instances and a central services instance that provides communication and synchronization among the multiple application server instances~~ tree;

[[a]] runtime managed ~~bean~~ beans that each continuously ~~monitors~~ monitor one or more associated resources of the plurality of resources in the system;

the monitor tree generated based, at least in part, on the semantics and the directives of the file to monitor the plurality of resources via the runtime managed beans, wherein the monitor tree includes a hierarchical grouping of a plurality of nodes, each of the plurality of nodes having

a monitor managed bean and

one or more resources of the plurality of resources associated with the monitor managed bean,

where the monitor managed bean collects information about each associated resource from the runtime managed bean associated with the resource(s),

wherein the monitor managed bean of each node of the monitor tree provides an individual report of the collected information about the resource(s) associated with the monitor managed bean of the node to the monitoring system, where the monitor tree enables distributed monitoring of the resources without requiring all monitoring data to be reported to a central location of the JMA; and

a visual administrator module to provide a graphical user interface to the monitoring system via the monitor service <u>during runtime of the system,</u>

<u>the visual administrator including an adapter service having a swing-based GUI to enable administration through a swing-based interface of monitor managed beans that are registered with the JMA,</u>

the visual administrator providing an interface to access individual nodes of the monitor tree to access <u>runtime</u> monitoring information about the resource(s) of the node, as provided by the associated monitor managed bean, without requiring all monitoring data to be collected at <u>and retrieved from</u> a central location.

2.   (Canceled)

3.   (Original) The system of claim 1, wherein the visual administrator module comprises:

a convenience interface to obtain information from the monitor service; and

a graphical user interface to provide a graphical representation of the monitor tree based, at least in part, on the information obtained by the convenience interface.

4.   (Original) The system of claim 3, wherein the graphical user interface is to provide a window pane to display, at least a portion of, the graphical representation of the monitor tree.

5.   (Original) The system of claim 4, wherein the graphical user interface is to further provide a second window pane to display a list of one or more properties for at least one of the plurality of nodes of the monitor tree.

6. (Original) The system of claim 5, wherein the list of one or more properties includes one or more key-value pairs, each key-value pair having a key to identify a listed property and a corresponding value to specify a current value of the identified property.

7. (Previously Presented) The system of claim 4, wherein the graphical user interface is to select one of the plurality of nodes of the graphical representation of the monitor tree.

8. (Original) The system of claim 7, wherein the graphical user interface is to further provide a second window pane having an attribute tab and an operation tab.

9. (Original) The system of claim 8, wherein the second window pane is to display a list of one or more attributes of the monitor managed bean, if the attribute tab is selected.

10. (Original) The system of claim 9, wherein at least one of the listed attributes includes a value field specifying a current value of the listed attribute.

11. (Original) The system of claim 8, wherein the second window pane is to display a list of one or more operations of the monitor managed bean, if the operation tab is selected.

12. (Original) The system of claim 11, wherein the second pane is to display an invoke button to selectively invoke one or more of the listed operations of the monitor managed bean.

13. **(Currently Amended)** A computer-implemented method employed within a network comprising:

accessing a file in a database, the file having semantics and directives to generate a monitor tree for a Java monitoring architecture (JMA) monitoring system compatible with Java management extensions (JMX) to individually monitor a plurality of <u>Java engine</u> resources within the network, where the semantics and directives define a hierarchical architecture of a monitor tree that monitors the plurality of resources of a cluster of application servers spanning multiple Java virtual machines (JVMs),

the semantics defining code to generate the monitor tree, including information about monitor managed beans, resources to be monitored, and relationships between the monitor managed beans <u>and</u> the resources, and

the directives defining how the semantics are to be implemented to form the monitor tree, wherein the cluster of application servers includes multiple application server instances and a central services instance that provides communication and synchronization among the multiple application server instances;

~~a runtime managed bean that continuously monitors one or more associated resources of the plurality of resources in the system,~~

generating the monitor tree based, at least in part, on the semantics and the directives of the file, the monitor tree to monitor the plurality of resources, wherein the monitor tree includes a hierarchical grouping of a plurality of nodes, each of the plurality of nodes having

a monitor managed bean and one or more resources of the plurality of resources associated with the monitor managed bean, where the monitor managed bean collects information about each associated resource from [[the]] <u>a</u> runtime managed bean associated with the resource(s),

<u>wherein the runtime managed bean continuously monitors one or more associated resources of the plurality of resources in the system,</u>

wherein the monitor managed bean of each node of the monitor tree provides an individual report of the collected information about the resource(s) associated with the monitor managed bean of the node to the monitoring system, where the monitor tree enables distributed monitoring of the resources without requiring all monitoring data to be reported to a central location of the JMA; and

displaying, at least a portion of, the generated monitor tree on a graphical user interface of a visual administrator via a monitor service that interfaces a visual administrator to managed bean servers of the monitoring system <u>during runtime of the system,</u>

wherein the displayed portion of the generated monitor tree includes the plurality of nodes, each of the plurality of nodes having a monitor managed bean and one or more resources of the plurality of resources associated with the monitor managed bean, including providing an interface to access through the graphical user interface individual nodes of the monitor tree to access <u>runtime</u> monitoring information about the resource(s) of the node, as

provided by the associated monitor managed bean, without requiring all monitoring data to be collected at <u>and retrieved from</u> a central location<u>, and</u>

<u>wherein displaying includes accessing a monitor managed bean through a swing-based GUI of an adapter service of the visual administrator, the adapter service having a swing-based GUI to enable administration through a swing-based interface of monitor managed beans that are registered with the JMA</u>.

14.   (Original) The method of claim 13, wherein displaying, at least a portion of the generated monitor tree on the graphical user interface of the visual administrator comprises:

displaying the portion of the generated monitor tree in a first window pane of the graphical user interface.

15.   (Canceled)

16.   (Previously Presented) The method of claim 13, further comprising:

selecting one of the plurality of nodes; and

displaying a list of one or more properties of the selected node in a second window pane of the graphical user interface.

17.   (Original) The method of claim 16, wherein displaying the list of one or more properties comprises:

displaying one or more key-value pairs in the second window pane of the graphical user interface, each key-value pair having a key to identify a listed property and a corresponding value to specify a current value of the identified property.

18.   (Previously Presented) The method of claim 14, further comprising:

displaying a second window pane having an attribute tab and an operation tab.

19.   (Original) The method of claim 18, further comprising:

displaying a list of one or more attributes of the monitor managed bean, if the attribute tab is selected.

20. (Original) The method of claim 19, wherein at least one of the listed attributes includes a value field specifying a current value of the listed attribute.

21. (Original) The method of claim 20, further comprising:

entering a value in the value field to specify a new value for the listed attribute.

22. (Original) The method of claim 18, further comprising:

displaying a list of one or more operations of the monitor managed bean, if the operation tab is selected.

23. (Original) The method of claim 22, wherein displaying the list of one or more operations of the monitor managed bean further comprises:

displaying an invoke button to selectively invoke one or more of the listed operations of the monitor managed bean.

24. (**Currently Amended**) A system comprising:

server hardware means for executing a cluster of application servers,

wherein the cluster of application servers includes multiple application server instances and a central services instance that provides communication and synchronization among the multiple application server instances;

memory means for storing a means for accessing a file in a database, the file having semantics and directives to generate a monitor tree for a Java monitoring architecture (JMA) monitoring system compatible with Java management extensions (JMX) to individually monitor a plurality of Java engine resources within the network,

where the semantics and directives define a hierarchical architecture of a monitor tree that monitors the plurality of resources of a cluster of application servers spanning multiple Java virtual machines (JVMs),

the semantics defining code to generate the monitor tree, including information about monitor managed beans, resources to be monitored, and relationships between the monitor managed beans <u>and</u> the resources, and

the directives defining how the semantics are to be implemented to form the monitor tree,

wherein the cluster of application servers includes multiple application server instances and a central services instance that provides communication and synchronization among the multiple application server instances;

~~a runtime managed bean that continuously monitors one or more associated resources of the plurality of resources in the system,~~

a means for generating the monitor tree based, at least in part, on the semantics and the directives of the file, the monitor tree to monitor the plurality of resources, wherein the monitor tree includes a hierarchical grouping of a plurality of nodes, each of the plurality of nodes having

a monitor managed bean and one or more resources of the plurality of resources associated with the monitor managed bean, where the monitor managed bean collects information about each associated resource from [[the]] <u>a</u> runtime managed bean associated with the resource(s),

<u>wherein the runtime managed bean continuously monitors one or more associated resources of the plurality of resources in the system,</u>

wherein the monitor managed bean of each node of the monitor tree provides an individual report of the collected information about the resource(s) associated with the monitor managed bean of the node to the monitoring system, where the monitor tree enables distributed monitoring of the resources without requiring all monitoring data to be reported to a central location of the JMA; and

a means for displaying, at least a portion of, the generated monitor tree on a graphical user interface of a visual administrator via a monitor service that interfaces a visual administrator to a node of a monitoring tree <u>during runtime of the system,</u>

wherein the displayed portion of the generated monitor tree includes the plurality of nodes, each of the plurality of nodes having a monitor managed bean and one or more resources of the plurality of resources associated with the monitor managed bean, including providing an interface to access through the graphical user interface individual nodes of the

monitor tree to access <u>runtime</u> monitoring information about the resource(s) of the node, as provided by the associated monitor managed bean, without requiring all monitoring data to be collected at <u>and retrieved from</u> a central location<u>, and</u>

<u>wherein the means for displaying include an adapter service having a swing-based GUI to enable administration through a swing-based interface of monitor managed beans that are registered with the JMA</u>.

25. (Original) The system of claim 24, wherein the means for displaying, at least a portion of the generated monitor tree on the graphical user interface of the visual administrator comprises:

a means for displaying the portion of the generated monitor tree in a first window pane of the graphical user interface.

26. (Canceled)

27. (Previously Presented) The system of claim 24, further comprising:

a means for selecting one of the plurality of nodes; and

a means for displaying a list of one or more properties of the selected node in a second window pane of the graphical user interface.

28. (Original) The system of claim 27, wherein the means for displaying the list of one or more properties of the selected node in the second window pane of the graphical user interface comprises:

a means for displaying one or more key-value pairs in the second window pane of the graphical user interface, each key-value pair having a key to identify a listed property and a corresponding value to specify a current value of the identified property.

29. (**Currently Amended**) An article of manufacture comprising:

an electronically accessible storage medium having instructions stored thereon that, when executed by an apparatus, cause the apparatus to

access a file in a database, the file having semantics and directives to generate a monitor tree for a Java monitoring architecture (JMA) monitoring system compatible with Java management extensions (JMX) to individually monitor a plurality of <u>Java engine</u> resources within the network,

where the semantics and directives define a hierarchical architecture of a monitor tree that monitors the plurality of resources of a cluster of application servers spanning multiple Java virtual machines (JVMs),

the semantics defining code to generate the monitor tree, including information about monitor managed beans, resources to be monitored, and relationships between the monitor managed beans <u>and</u> the resources, and

the directives defining how the semantics are to be implemented to form the monitor tree,

wherein the cluster of application servers includes multiple application server instances and a central services instance that provides communication and synchronization among the multiple application server instances;

~~a runtime managed bean that continuously monitors one or more associated resources of the plurality of resources in the system,~~

a runtime managed bean that continuously monitors one or more associated resources of the plurality of resources in the system,

generate the monitor tree based, at least in part, on the semantics and the directives of the file, the monitor tree to monitor the plurality of resources, wherein the monitor tree includes a hierarchical grouping of a plurality of nodes, each of the plurality of nodes having

a monitor managed bean and one or more resources of the plurality of resources associated with the monitor managed bean, where the monitor managed bean collects information about each associated resource from [[the]] <u>a</u> runtime managed bean associated with the resource(s),

<u>wherein the runtime managed bean continuously monitors one or more associated resources of the plurality of resources in the system,</u>

wherein the monitor managed bean of each node of the monitor tree provides an individual report of collected information about the resource(s) associated with the monitor managed bean of the node to the monitoring system, where the monitor tree enables distributed

monitoring of the resources without requiring all monitoring data to be reported to a central location of the JMA; and

display, at least a portion of, the generated monitor tree on a graphical user interface of a visual administrator via a monitor service that interfaces a visual administrator to a node of a monitoring tree <u>during runtime of the system</u>,

wherein the displayed portion of the generated monitor tree includes the plurality of nodes, each of the plurality of nodes having a monitor managed bean and one or more resources of the plurality of resources associated with the monitor managed bean, including providing access through the graphical user interface to individual nodes of the monitor tree to access <u>runtime</u> monitoring information about the resource(s) of the node, as provided by the associated monitor managed bean, without requiring all monitoring data to be collected at <u>and retrieved from</u> a central location<u>, and</u>

<u>wherein displaying includes accessing a monitor managed bean through a swing-based GUI of an adapter service of the visual administrator, the adapter service having a swing-based GUI to enable administration through a swing-based interface of monitor managed beans that are registered with the JMA</u>.

30.   (Original) The article of manufacture of claim 29, wherein the instructions that, when executed by the apparatus, cause the apparatus to display the portion of the generated monitor tree in a first window pane of the graphical user interface cause the apparatus to

display the portion of the generated monitor tree in a first window pane of the graphical user interface.

31.   (Canceled)

32.   (Original) The article of manufacture of claim 30, wherein the electronically accessible medium provides further instructions that, when executed by the apparatus, cause the apparatus to

display a second window pane having an attribute tab and an operation tab; and

display a list of one or more attributes of the monitor managed bean, if the attribute tab is selected.

33.   **(Canceled)**

34.   **(New)** The system of claim 1, wherein the adapter service further includes a remote connector interface to enable remote access and administration to monitor managed beans that are registered with the JMA.

35.   **(New)** The method of claim 13, wherein displaying further includes remotely accessing the monitor managed bean through a remote connector interface of the adapter service, the remote connector interface to enable remote access and administration to monitor managed beans that are registered with the JMA.

36.   **(New)** The system of claim 24, wherein the means for displaying further include a remote connector interface to enable remote access and administration to monitor managed beans that are registered with the JMA.

37.   **(New)** The article of manufacture of claim 29, wherein displaying further includes remotely accessing the monitor managed bean through a remote connector interface of the adapter service, the remote connector interface to enable remote access and administration to monitor managed beans that are registered with the JMA.